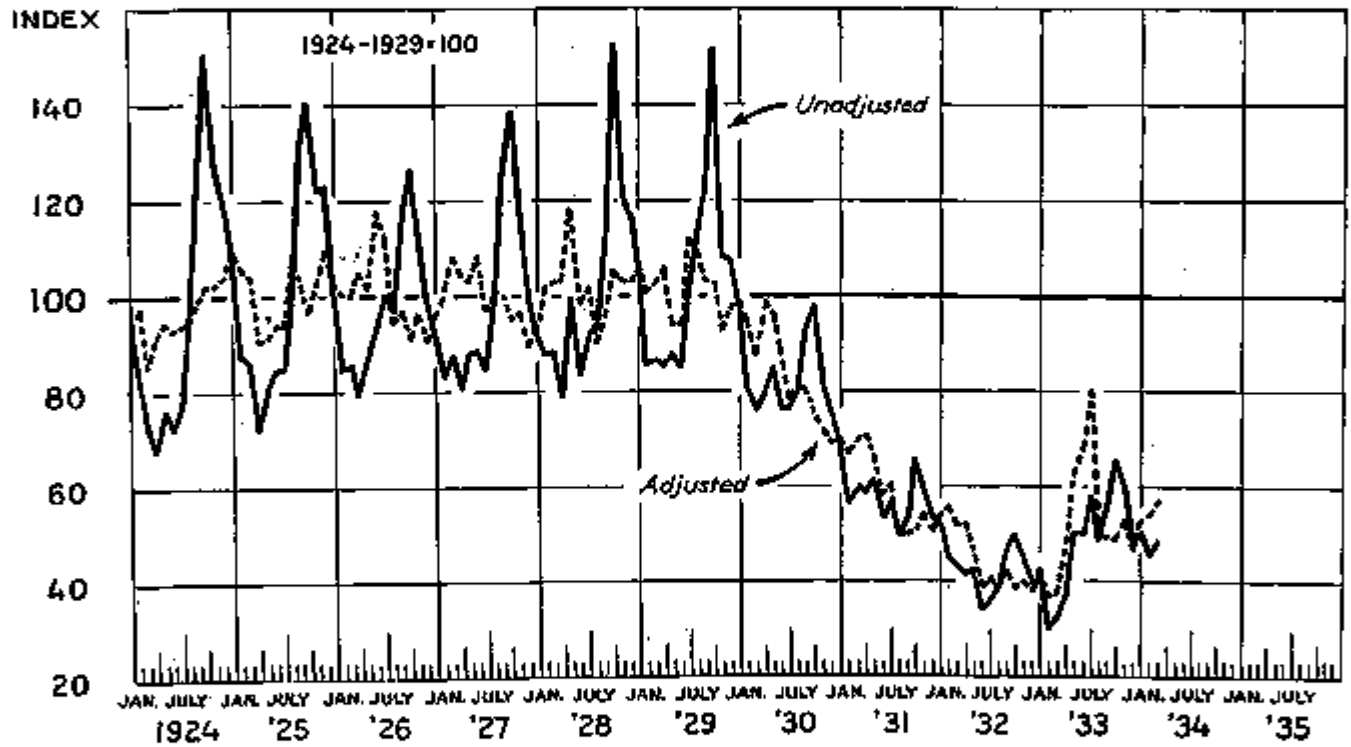
Index of Cash Income from Farm Marketings[1]

IN RESPONSE to the need for a current and adequate measure of changes in income from agriculture, the Bureau of Agricultural Economics has prepared a new monthly index of the cash income derived by farmers from the sale of farm products. These indexes are based on estimates of monthly cash income for the period January 1924 to January 1934, and they have been adjusted for seasonal variations. Current estimates in continuation of the data presented herewith will be carried each month in the Survey of Current Business. In addition to these indexes, the Bureau of Agricultural Economics has prepared and issued actual dollar figures covering this same period, and current data of this nature are being released each month. Copies of this additional material may be obtained upon request from that Bureau.



[1] Index of Income from Sales of Farm Products

Differences Between Monthly and Annual Estimates

The indexes presented herewith are based on estimates of the monthly cash income from marketings of 37 of the more important agricultural products. The income from these 37 commodities in most years represents about 90 percent of all cash income received by farmers. Although the total of the 12 monthly estimates of income for any year is approximately the same as the annual estimates of cash income from farm production, they are not exactly comparable. Slight differences occur because the annual estimates of cash income represent the total income from the crops sold or to be sold from the production of the year, while the monthly estimates are based upon marketings regardless of when the crops were produced. Also, the annual estimates of cash income from crops are on a crop-year basis and the crop year varies materially for different crops. While some crops, such as strawberries, watermelons, and other highly perishable commodities, are marketed in the summer months of the calendar year in which they are produced, other crops such as oranges, potatoes, and corn are marketed largely in the year following the calendar year in which they are produced. Some differences between the monthly estimates and annual estimates of cash income may also be expected because the monthly estimates are based upon a sample of all farm products sold, which includes only a portion of the marketings of those products, whereas the annual estimates of cash income are based upon all farm products sold either locally or in central markets.

[1] Index prepared by O. M. Purves, Bureau of Agricultural Economics, U.S. Department of Agriculture. Described in a mimeographed article, published by that Bureau, which has been adopted for use here.

Method of Computing Monthly Estimates

Estimates of monthly cash income are derived from estimated monthly marketings of the several farm commodities and the farm price of these commodities. Monthly marketings are computed from a variety of data.

Marketings of grains are estimated from the receipts and inspections at primary concentration points. The total receipts of any grain for the crop year are compared with the estimated total sales of that grain, as determined from reports on the proportion of the production sold or to be sold, and the monthly receipts are then adjusted to equal the amount sold by farmers during the crop year. These adjusted marketings multiplied by the average farm price give cash-income estimates by months which for the entire crop year approximate the annual estimate of cash income. Separate estimates are made for wheat, corn, barley, oats, rye, and rice and the monthly data totaled. These monthly totals are then adjusted for the grains not included. The grains included represent approximately 96 percent of the value of all grains sold by farmers.

Cotton and cottonseed marketings are estimated from receipts of these commodities at the 10 principal spot markets for cotton. These monthly marketings are adjusted to equal total marketings of cotton and cottonseed during the crop year, then multiplied by the monthly farm price to derive monthly income from marketings.

Marketings of fruits and vegetables are measured by car-lot shipments from the principal producing areas. Shipments are adjusted to represent total marketings and the income calculated in the same way as for other crops. This group includes oranges, grapefruit, lemons, apples, peaches, pears, strawberries, watermelons, cantaloupes, potatoes, sweetpotatoes, dry edible beans, tomatoes, cabbage, onions, lettuce, and celery.

The estimates of income from meat animals are derived from the monthly inspected slaughter of cattle, calves, hogs, sheep, and lambs. Inspected slaughter for each type of animal is adjusted to equal total slaughter; thus monthly income from livestock is based upon estimated total slaughter and the farm price for the month.

Income from dairy products is estimated from the monthly marketings and farm prices of whole milk at wholesale, whole milk retailed by farmers, and farm butter and butterfat. Since monthly data on marketings of whole milk are not available, marketings are estimated by applying an average seasonal trend of marketings to estimated annual sales of whole milk at wholesale and retail. This seasonal trend for milk retailed by farmers merely adjusts for the number of days in the month. The seasonal trend of fluid-milk sales at wholesale is derived from monthly receipts of fluid milk and cream at the larger cities, and monthly production of whole-milk products. Income from the sale of chickens and eggs is estimated from the receipts of these products at the principal markets.

Monthly Estimates Raised to Equal Total Cash Income

When thus adjusted, the crops included provide about 88 percent of the total income from crops and the livestock and livestock products provide about 98 percent of the total income from these products.[2] The monthly estimates of income from the commodities included in both crops and livestock were then raised to equal total cash income from all crops and livestock sold. This was done in the case of crops by determining for each year from 1924 to 1932 what percentage the annual cash income from those crops included in the monthly estimates of cash income was of the total annual cash income from all crops. The monthly estimates of cash income were then divided by these percentages, thus raising them to the level of income from all crops. As the percentage was practically constant for all years from 1924 to 1932, it was estimated that the cash income from these commodities in 1933 would bear about the same relationship to the total cash income as in previous years. Monthly estimates of income from all livestock were determined by a similar comparison of the annual cash income from livestock and livestock products represented in the monthly estimates of cash income and the total annual cash income from all livestock products.

As the marketing season for the various crops differs materially and some crops produced in the current year are being sold at the same time as crops produced in the previous year, the total of the monthly estimates of cash income for any 12-month period are not directly comparable with the annual estimate of cash income from all crops. For livestock the sum of the 12 monthly estimates of cash income for the calendar year is directly comparable with the annual cash income from livestock.

[2] As the indexes are based on cash income from the marketings of farm products, they do not include the cash income derived from payments made by the Agricultural Adjustment Administration for participation in production-control programs. Rental and benefit payments made to date are indicated in the following table showing benefit and rental payments to farmers not included in other sources of income:

Year and month	Cotton	Tobacco	Wheat	Hogs [4]	Total
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
1933:					
August	771	1	----------	117	889
September	49,254	41	----------	24,020	73,324
October	50,902	688	----------	3,780	55,102
November	7,947	372	2,204	----------	10,513
December	2,755	289	10,103	----------	10,137
Total	111,419	1,374	18,397	27,926	159,015
1934:					
January	32,484	272	26,022	----------	59,558
February	14,073	90	14,316	----------	28,422
March	3,480	11	5,008	----------	8,499

[4] Only 85 percent of payment on hogs was included as payments to farmers, the remaining 15 percent being allowed to cover commission charges and freight to packing plants where payment was made by the Agricultural Adjustment Administration.

Source: Bureau of Agricultural Economics.

Elimination of Seasonal Variations

Although many farm products are marketed each month of the year, marketings in some months are much larger than in others. This variation in marketings is offset to some extent by variations in prices, but there still remains a marked seasonal trend in the monthly income from the sales of farm products. Monthly income estimates are usually highest in October, decline each month from October until April, and then increase to October. When comparing the income of any one month with the income of preceding or following months, this seasonal variation must be considered. In order to facilitate the month-to-month comparison, the seasonal variation was eliminated from the monthly estimates of income. The chart accompanying this article gives a comparison of the adjusted and unadjusted monthly estimates of income converted to a percentage of the average monthly income for the years 1924 to 1929.[1]

Seasonal variations in marketings and in income from the various farm products are markedly different. For example, income from eggs reaches its peak in the spring months and income from chickens in the fall months. Thus, while there is a decided variation in the monthly income from poultry and eggs when the two series are combined, the seasonal variation is partly eliminated. However, any marked variation in the marketings of either poultry or eggs would tend to result in a different seasonal trend, although the change in the monthly income from either of these products might not differ materially from the usual seasonal trend of income. In order to overcome such irregularity as might be due to fluctuations in the sales of different commodities from year to year, the seasonal variation in income was eliminated in each commodity before index numbers were computed.

Method of Seasonal Adjustment

The average of monthly incomes for each month for the years 1924 to 1929 has been used as a base from which to measure seasonal variations in marketings. The seasonal variation for January was eliminated by determining the percentage that the average January income for this 6-year period was of the average income for the entire 72 months. Where the average January income from a commodity was found to be 80 percent of the average monthly income for the period, dividing the January income estimates by 80 percent eliminated the seasonal variation for that month. Similar adjustments were made for each month in the year. After eliminating the seasonal variation in income for each commodity, the adjusted incomes were combined into groups before being converted into index numbers with the average monthly income from 1924–29 equal to 100.

As monthly variations in incomes from crops are very wide, it is necessary to take the seasonal factors into account in comparing the income of 1 month with that of others within the year. However, it is difficult to determine what might be considered normal seasonal changes in income from crops. In many cases more than half of the crop is moved to market within a few months after harvest, and the movement of the remainder of the crop in the other 9 months is often irregular. Furthermore the harvesting season shifts to some extent from year to year with changes in weather conditions, and the marketing may be affected not only by weather but also by general economic conditions. Consequently, after making adjustments for any average seasonal change, there may be in any one year considerable variation from this average in consequence of seasonal conditions, as well as economic conditions that are not directly related to the usual seasonal factors. The seasonal variation in income from livestock is much more regular than that from crops, and after seasonal adjustment the estimates of income from livestock and livestock products are more representative of the changes effected by economic conditions.

Comparison of Index of Marketings

The indexes presented herewith differ materially from the indexes of marketings which have been carried regularly in the Survey of Current Business. These latter indexes are quantitative measures of the marketings of farm products, and are not adjusted for seasonal variations. A description of the index of marketings may be found on page 18 of the March 1933 issue of the Survey.

[1] The years 1924–29 were used as a base for the reason that the quinquennial census data are available for the first and last year of this period. The 1923–25 base period, which is used for many other indexes, was not adopted because the advantages of the 1925–29 base are obvious. However, it is believed that the trend of the index would not vary materially on a 1923–25 base, since the average gross farm income for the period 1924–29 was 102 percent of the 1923–25 average.